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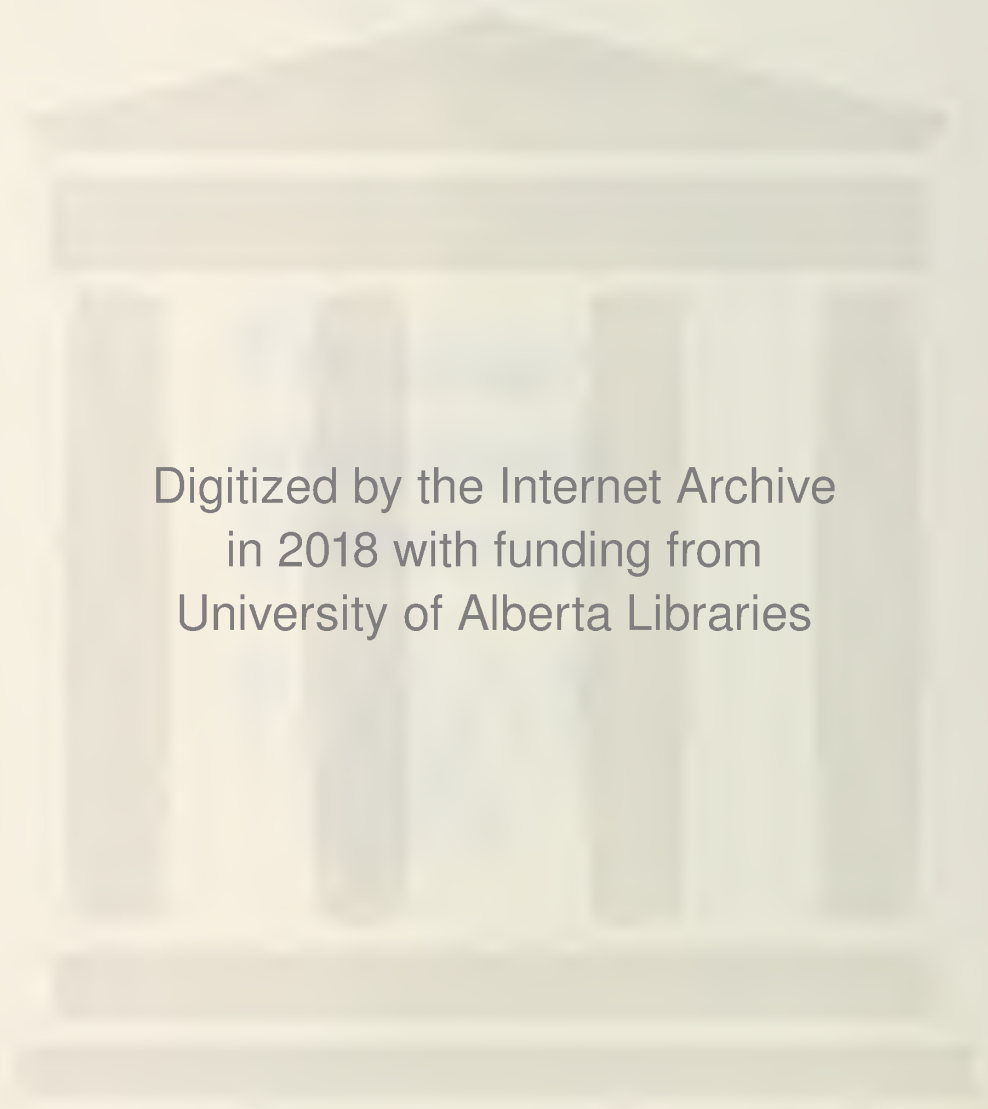
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THE UNIVERSITY OF ALBERTA

A SURVEY OF PUPIL PROGRESS IN EDMONTON CITY SCHOOLS

A DISSERTATION
SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF EDUCATION

FACULTY OF EDUCATION

BY
THOMAS M. McMANUS

EDMONTON, ALBERTA
OCTOBER, 1950

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CHAPTER I

INTRODUCTION

1. Purpose of the Investigation

One of the current problems confronting educational authorities is whether or not the present pupil promotion practices are satisfactory.

Alberta schools are organized on an annual promotion basis. From time to time students are passed, failed or allowed to skip a grade on the basis of their work. Promotion in all grades, except nine and twelve, is independent of the results of departmental examinations. In grades nine and twelve students are required to write examinations set by the Department of Education and promotion depends on the results.

One of the consequences of the present practices is the noticeable number of pupils in all grades who are older than the majority of their classmates. Some of these are over-age for their grade due to non-promotion at the end of the year. These are forced to repeat the year with students younger than themselves. Various other factors, such as starting school late or missing a portion or a complete year of school also contribute to over-ageness. The combination of these factors places a considerable portion of the school population out of their age group.

In contrast to these over-age students there are some who are younger than the majority of their classmates. This situation is the result of students having started school early or having been accelerated during their school career.

The purpose of this investigation is to determine the result of present promotion practices as manifested in a sample drawn from the present grade nine population in the Edmonton City Schools.

2. The Problem

The problem of this dissertation is to determine the answers to the following questions:

1. What proportion of the present grade nine population has been accelerated?
2. What proportion of the present grade nine population has been retarded?
3. What grades produced the largest percentage of failure?
4. What grades were most often skipped?
5. What appear to be the causes of acceleration and retardation?
6. What, in the opinion of the teachers concerned, are the most important causes of retardation?
7. What, in the opinion of the teachers concerned, is the anticipated percentage of failure?
8. What, in the opinion of the teachers concerned, is the desirable percentage of acceleration?

CHAPTER II

RELATED READING

1. Acceleration and Retardation

School progress is the term used to denote the advancement of pupils through the school grades. Normal progress denotes that since starting school a pupil has advanced through one grade during each year of attendance. When a pupil progresses through school more slowly or more rapidly than this, he is said to be either retarded or accelerated as the case may be.

This aspect of school progress came under study early in this century when it was noticed that a large number of students were older than the majority of their classmates.(1) Since that time a great deal of research has been conducted in order to determine what proportion of the school population was not progressing normally. The problem can be approached from either one of two points of view: the age of children in a given grade, or the number of years it has taken the pupils to reach the grade they are in.(2)

In a general sense, to be retarded means that a child is over-age for his grade. This, however, does not take into consideration the age of starting school or the loss of time through illness, removals and the like. Ac-

tually a child should be considered retarded only when he has repeated one or more grades. Acceleration, on the other hand, in a general sense means that a child is under-age for his grade. This, however, does not take into account age of starting school, and many children considered to be accelerated have in reality made only normal progress. Therefore, strictly speaking, a child should be considered accelerated only when he has been allowed to skip one or more grades.

2. Proportion of Accelerated and Retarded Students

An examination of reported studies on acceleration and retardation reveals not only that a large number of American children are retarded but also that vastly more are retarded than accelerated.

As an indication of the number of accelerated and retarded children in school the findings of a study by Mort and Featherstone are presented. Data were secured on the promotion practices of thirty-six school systems carefully selected to represent an adequate sampling of all city school systems.(3) The following table shows the percentages of students whom they found to be accelerated and retarded. Percentages are shown only for those grades which are considered to be key grades: grade one, first year junior high, and first year high school.

TABLE I

PERCENTAGE OF ACCELERATION AND RETARDATION IN THIRTY-SIX CITY SCHOOL SYSTEMS (AFTER MORT AND FEATHERSTONE)(4)

	Semi Annual Promotion			Annual Promotion		
Grade	1	7	10	1	7	10
Under Age	5.5	14.2	12.2	22.8	19.7	22.0
Normal Age	78.4	46.4	40.8	73.9	58.6	62.1
Over Age	16.1	39.4	47.0	3.3	21.7	15.9

This table, with the exception of grade ten in annual promotion schools, shows an increase in the percentage of retarded children through the grades. The reduction in the proportion of retarded children in grade ten is due to the number of retarded children who drop out of school between grades seven and ten. Other studies reported also indicate that a considerable number of elementary school children are retarded. According to these, the cumulative effect of non-promotion ranges from eleven to fifty-four per cent with a median at thirty-five.(5)

More recent studies than these indicate that the proportion of accelerated and retarded students has not decreased. Stroud(6) reports the findings of two of his students on the problem. These students conducted surveys of the school populations completing grade six at the end of the school year 1944-45 in Omaha Public and

Iowa Consolidated schools. In the first study it was found that 21.3 per cent had experienced failure one or more times. The other study revealed that 20.7 per cent had been retarded.

Another study reported the percentage of over-age pupils in a school to be 38 per cent of the boys and approximately 34 per cent of the girls.(7) Proportionately more boys than girls are retarded, and fewer boys than girls are accelerated.

The previously mentioned study by Mort and Featherstone showed that in annual promotion schools, of all children retarded in the sixth grade, 20 per cent are retarded one year; 5.3 per cent are retarded two years; 1.2 per cent are retarded three years; and 0.2 per cent are retarded four years. The studies conducted in Omaha Public and Iowa Consolidated schools showed respectively that of those retarded 29 per cent and 38 per cent had failed more than once.

Studies examined indicated the proportion of accelerated students to be relatively small compared to the percentage retarded. One study reports only four per cent accelerated as against twenty-seven per cent retarded.(8)

3. Acceleration

Acceleration, which is sometimes called grade skipping or double promotion, is an administrative device used

in an effort to adjust the school curriculum to the superior student. However, even though this device is available for use, little use appears to be made of it.

In recent years a great deal of research has been done in an effort to determine the effects of acceleration. The question as to whether the practice is beneficial or detrimental has been widely argued.

The majority in favor of acceleration approach the topic from the point of view of intellectual capacity. Their opinion is that while only a very small percentage of our school children are accelerated there are many more who are capable of being accelerated. One author states that approximately twenty per cent of the children attending school have an intelligence quotient above 114, and are capable of making more than normal progress.(9)

Many of those in favor of acceleration are concerned only with the intellectually gifted; others are interested in all above average pupils.

The argument they use is based on the meaning of the intelligence quotient. They contend that if the intelligence quotient is indicative of learning capacity, then above average children are capable of learning more in a shorter period of time than their less gifted classmates.

One author goes even farther than the majority in favor of acceleration and directs attention to the possibility of acceleration for the average student.(10) He points to the success of those students who, during the war, were pressed to complete their education in less time than usual before being called into service. The success of many of these indicates that with sufficient motivation it is possible for the average student to proceed at a faster pace than usual.

The proponents of acceleration feel that the present promotion practices are failing to fulfill the needs of our best students. They deplore the fact that these students are forced to proceed through school at the same rate as their less fortunate classmates and that they are confronted with a curriculum adapted to the needs of the average student which presents no challenge to them. On the contrary they usually find it dull and uninteresting. These practices are said to fail in developing the best minds of our youth.(11)

Even though the practice of accelerating students is limited in extent reported studies indicate that the majority of teachers are not opposed to the acceleration of superior students.(12) They qualify their approval, however, by stipulating that the amount of acceleration be limited and that students before being accelerated be studied to ensure that they are emotionally and socially,

as well as intellectually, qualified to enter the higher grade.

A number of studies have been reported in which an effort was made to ascertain the effects of acceleration on the superior student. The findings from a number of these are listed below:

1. No detrimental effects on success in high school.(13)
2. No detrimental effects on adjustment in high school or in later life.(14)
3. Acceleration contributes something to the scholarship of the bright student.(15)
4. Achievement of accelerated students equal to or superior to equally bright unaccelerated students.(16)
5. Accelerated groups graduating from college when compared with matched groups not accelerated:(17)
    a. obtained more advanced degrees,
    b. obtained higher salaries, and
    c. were rated higher by their supervisors.

The findings of these reported studies indicate the acceleration of capable students has very few, if any, ill effects.

Moreover there are reports of the ill effects on superior students who are forced to go through the grades at the usual pace.(18) Such students faced with the repetition of dull uninteresting material become disgruntled and disinterested. Rather than go through

what is to them unnecessary repetitions many become disciplinary problems. Thus the failure on the part of the school to meet the intellectual and emotional needs of the gifted children often results in the development of behavior disorders.

In spite of the growing amount of evidence in favor of acceleration there is an increased feeling that little is to be gained by hurrying children through school too rapidly. Instead of acceleration there are increasing efforts at curriculum enrichment which is supposed to reduce the need for acceleration.(19)

According to Johnson(20) the current opposition to acceleration is a heritage from an earlier educational era. Mistakes made in accelerating students, before they could be identified properly, led parents and educators to shun all acceleration.

Those who speak out against acceleration use, in general, the following arguments: (21)

1. The process is undemocratic.
2. It deprives a child of a portion of his educational rights.
3. It is likely to induce nervousness and emotional instability.
4. It may jeopardize his entire personality development.
5. It interferes with the sequence of subjects taught.(22)
6. It leaves a child without a thorough knowledge of the subject matter of the grade which was skipped.(23)

4. Retardation

"Retardation", "non-promotion", and "failure" are terms used synonymously in educational literature, and refer to the situation in which a child is denied promotion to the next higher grade at the close of a school term.(24) Whether this practice is sound educational policy has been argued for a number of years.

This argument has led to a great deal of research which has been reported in educational journals and periodicals. Many writers have expressed their views as to the desirability of the practice.

These reports indicate that there is no single concept or group of ideas which form the basis of the promotion policies of the various school systems.(25) Reasons given for the promotion or failure of a child vary considerably. Most frequently reasons given are based on teachers' estimate of industry and initiative.

In recent years, with the increased emphasis on the child as the centre of educational activity, there has been an increase in the number who favor 'straight promotion'. Many who are opposed to this advocate, at least, an increase in the number who are promoted.

This development has led those in favor of retardation to expound their views more freely. They

feel that repetition of a grade will have the following desirable results:

a. assure mastery of subject matter,
b. discipline the lazy child,
c. allow time for adjustment of the immature child,
d. retrieve losses due to absence,
e. allow more time for the dull child, and
f. maintain the morale and standards of the school.

In addition to these arguments in support of retardation some authors have spoken of the disadvantages of the 'no-failure' plan. Hildreth(26) believes this plan to have the following disadvantages:

a. It promotes children to the higher grades with lower mental ages than previously.
b. It increases the range of ability and achievement in a grade.
c. It increases the range of interests in a grade.
d. It increases the range of social and emotional maturity.

Another author attributed much of the present difficulty in teaching reading to the practice of straight promotion in operation in his school system.(27) His most serious criticism of the plan is that no responsibility has been assumed to provide instruction in line with indi-

vidual differences.

In addition to these writings a great deal of research has been done in an effort to determine the advantages or disadvantages of causing a child to repeat a grade.

The findings of one study which compared the social and emotional adjustment of regular and slow-progress children are listed below:(28)

a. Non-promotion placed slow-progress students with classmates who were younger, generally smaller, and physically less mature. These were important factors, as they influenced children's acceptance or rejection of classmates as companions.

b. Repeaters were more likely to prefer to associate with companions from the upper grades.

c. Neither slow-progress nor regularly-promoted students considered the other as appropriate companions.

d. Neither received the social approval of the other group.

e. Each chose members of their own group to sit near.

f. Ratings of children and teachers suggested that the repeaters often exhibited anti-social behavior.

g. Retarded children exhibited more behavior of the sort likely to be troublesome during school hours.

h. Teachers did not take account of pressures and underlying causes of misconduct on the part of retarded students.

i. Slow-progress students required more disciplinary action than regularly promoted classmates.

j. Teachers reported twenty-five per cent of the slow-progress students, as against five per cent of regularly-promoted classmates, as serious behavior problems.

k. Size and more mature social interests of the repeaters, especially those who had been non-promoted two or three times, were likely to make their behavior in the company of smaller and younger classmates more noticeable.

l. It appeared that the behavior of retarded pupils in the company of others of their own age was not so unsocial.

m. Attitude and adjustment of slow-progress pupils was not so favorable as that of normal-progress classmates.

n. Non-promotion caused considerable emotional upset.

o. Non-promotion brought punishment, ranging from

mild to severe forms, from parents.

p. Children regard non-promotion as a serious matter.

In conclusion the authors summarize their findings as follows:

"The total findings of this study combine to show that the slow-progress children in general were less favorably adjusted socially in their class groups than were their classmates. A considerable proportion preferred to associate with companions in the upper grades. Moreover, to a large extent they did not consider their younger normal-progress classmates as appropriate companions, nor did the repeaters, generally speaking, receive the social approval or acceptance of the regularly promoted pupils. In addition, the slow-progress children exhibited behavior and attitudes which left much to be desired and which indicated that school life for most of them was not a happy one.

The data do not show to what extent the foregoing characteristics could be attributed to causes directly related to non-promotion but they do indicate that, of the many factors which may have operated, the factor of non-promotion was among the important ones.

The results of the present investigation seem to lead to the viewpoint that the burden of proof rests upon those who advocate non-promotion as a policy affecting a considerable proportion of the elementary school population. The weight of the evidence concerning academic progress, and the findings of this study concerning the social and emotional development of the non-promoted pupils, point to the value of a scheme whereby children within the normal range of intelligence and physical development will have the opportunity to enjoy the benefits that come with continued progress in the company of others of their own age group."

Many other authors agree that retardation as a general practice is unsound, and much of the reported research seems to support this view. Hayton(29) states that the practice operates to destroy a child's confidence in his ability to learn. She further states that

it is a calamity for a pupil to repeat a grade unless there are special circumstances which make it acceptable to him. Some of these circumstances might be: his attendance has been irregular; he has been held back by illness; he feels himself unable to keep up with the other members of the class.

Viele(30) concurs with this opinion and feels that no child should be forced to repeat a year unless both the child and the parents agree. However, he is not in favor of straight promotion and believes that an extra year in a grade will be beneficial if the intelligence quotient of the child is not less than eighty.

Hayton(31) even though expressing herself freely against retardation states:

> "On the other hand, it may be just as big a mistake to slide a pupil into a grade for which he is unprepared. The ideal for which we strive is to watch each pupil from the first day of school in September so as to see that he is making adequate progress, and to give the slow ones extra help and sympathy. The teacher must make it evident to these slower pupils that she believes in their ability to learn if only the right way of presenting the work can be found."

5. Relation of Retardation to Elimination

A study conducted by the Canadian Research Committee on Practical Education revealed that of the pupils enrolled in Canadian schools in grade six 18.5 per cent

dropped out before grade eight and that 49 per cent dropped out by grade ten.(32) A further study showed that of every one hundred boys who reach grade seven, twenty-eight will drop out in grades seven, eight, or nine. For girls the figures are slightly less, twenty-one out of every one hundred dropped out before reaching grade ten.(33)

One of the important factors in relation to dropping out of school appeared to be the number of grades repeated. Pupils who dropped out of grades seven and eight had repeated an average of 1.28 grades. Those who dropped out in grade nine had repeated an average of 0.60 grades.(34)

An average retardation of less than one year in the grade nine drop-outs would seem to indicate that those who are retarded the greater number of years drop out early. It would be interesting to know how many of these retarded pupils dropped out on reaching school leaving age.

The authors of the above study believe that grade failure is indicative of early dropping out.

6. Value of Retardation

Retardation as a general rule means discouragement to a pupil. The end result of this may be the development of a sense of futility and a cessation of all orderly effort.(35)

While most writers agree that it is inexpedient to do away with the practice, there is little evidence to support the contention that children who are failed will achieve greater mastery of subject matter in the repeat year or subsequent years. One report shows that of those failed twenty per cent achieve slightly better in their repeat year; forty per cent achieve at the same level as previously and twenty per cent achieve at a lower level.(36)

Retardation is used to adjust the slow learning pupil to the curriculum of the school. This should operate to reduce the variability in intelligence and achievement in the classrooms. The Bureau of Educational Research of the University of Minnesota compared two groups of schools to determine whether promotion practices did reduce the variability of the classes.(32) Of the two groups, one had a high percentage of failure, the other a low percentage. The findings of this study are presented as indicative of the limitations of retardation:

"1. The evidence supports rather conclusively the contention that schools with a relatively high percentage of failures tend to have a relatively high proportion of over-age, slow learning pupils.
2. In these schools the high percentage of over-age pupils who have been retarded through failure reduces both the average intelligence of the classes and the achievement average of the grades, when compared with schools having more lenient standards of promotion.
3. When the achievement of pupils of equal chronological age and mental age in the two groups of schools are compared, no difference is found.

4. When the variability of classes is compared with respect to mental age and eleven educational achievement fields, no significant difference is found between the two groups of schools.
5. The evidence supports the conclusion that by failing slow-learning pupils, a school cannot increase its grade achievement or reduce the variation of achievement found in the individual classes."

Thus it appears that many of the common notions concerning the values to be derived from repeating a grade have been shown to be false. The gist of the research done seems to indicate that the practice is more detrimental than beneficial.(38) Several objective studies have shown that school failure is not as valuable in promoting educational growth as is promotion to the new grade.(39)

7. Causes of Acceleration and Retardation

Acceleration and retardation are promotion practices used in an attempt to adjust the curricula of the school to the superior and the poorer student. These devices are used when the child achieves more or less than is expected for promotion to the next grade. In the one case a child is allowed to skip the next grade and is accelerated. In the other case a child is forced to remain in the same grade for another year and is retarded.

Acceleration then is the result of superior achievement frequently the reflection of superior men-

tal capacity. In some instances superior achievement may be the result of extreme motivation causing the child to devote more than the usual amount of time to school work. In general it may be said that the cause of acceleration is achievement over and above that required for the grade. This is indicative of superior mental capacity.

The causes of failure are much more numerous than those of acceleration. Many investigators find numerous causes. Failure in the case of an individual pupil may be the result of any one or a combination of causes.

Research studies do not agree entirely as to the most frequently posted causes of failure but in general the following list may be taken as representative:

a. Low mentality of the pupils.
b. Work too difficult for the pupils.
c. Excessive absence from school.
d. Poor quality of work.
e. Lack of pupil interest and attention.
f. Excessive amount of moving from school to school.
g. Philosophy of the school.
h. Poor social and home background.
i. Lack of attention to individual differences.
j. Poor foundation.
k. Poor health.
l. Age at time of beginning grade.
m. Physical defects.

This list was taken from the Encyclopedia of Educational Research and seems to include all of the reasons listed in other studies.(40)

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CHAPTER III

THE SAMPLE

1. Selection of the Sample

The sample selected for study consisted primarily of those students who were in grade IX during the school year 1949-50 in King Edward and McCauley Schools. Also included were those students who, if normal progress were assumed, would have been in grade nine this year, but who dropped out of school during this and the previous two years. It also included those students who had transferred into these schools from country points and whose previous school records were not available.

The author feels that it would have been desirable to have included all grade nine pupils in Edmonton city schools. However, the number of records involved in such a project would have placed the study beyond the scope of this thesis.

It was felt that while the sample selected for study represented a large cross-section, no claims could be made that the selection was representative of all grade nine pupils in Edmonton city schools. In order to make such a claim, more grade nine pupils from different areas of the city would have to be included.

Before selecting the above sample for study, another plan considered was the selection of all students

who had entered grade one in a particular year and who were now attending school in grade nine. To complete this sample it would have been necessary to include those who had dropped out of school during the last few years when termination of school attendance became legally possible.

In evaluation of this sample it was assumed that the number of students who had transferred out of a school would be approximately equal to those who transferred into the school.

Granting the soundness of this method of selection it was not felt that study of the promotion practices employed on the sample was possible.

It was revealed that, of those students who had started school in 1941, only those who had made normal progress were now in grade nine. Some of the other students were retarded. Others had been accelerated.

This examination also revealed that, in addition to those who had started school in grade one in 1941 and were now attending school in grade nine, there were many students who had started school previous to or later than this time. These students were those who had either failed one or more times or who had been allowed to skip one or more grades. Thus from the point of view of starting school the grade nine population had a considerable range.

The question then arose whether or not the study could be made from the point of view of the age of students in grade nine. If it were assumed that there was a particular age range which indicated normal progress up to grade nine, then students, whose age was outside this range, could be classified as being either over or under-age. On the basis of this further assumption these students could then be considered as being either retarded or accelerated.

However, Stroud(1) points out that there are two sources of error in this procedure which operate in different directions:

> In the first place, some pupils are retarded for reasons other than failure, such as entering school at an advanced chronological age, enforced discontinuance for one year or more, owing to protracted illness, and the like. In the second place, some pupils may fail one or more semesters and yet be in grades normal for their ages, because of having entered school at an early age or catching up with their grade after having failed.

A similar process of reasoning can be applied to those students who appear as under age. Therefore the criterion of age in a particular grade is not a sufficient basis from which to determine the amount of acceleration and retardation. Some more satisfactory bases are required.

According to Stroud(2) the best way to make a study of retardation would be from the records of those students who had completed a particular grade. This

method, he claims, would show the percentage of students who are retarded at the completion of the grade being studied. In addition, such a study would show the percentage of students who had been accelerated.

However, this method of study still does not give a complete picture and would underestimate the percentage of failure.(3) The reasons for this as related by Stroud are:

1. Some pupils who fail drop out of school before completing the grade being studied.
2. Some pupils are transferred to special schools of one kind or another.
3. Some pupils who may have completed the previous year do not return to the grade being studied.

Another weakness of a study of retardation cited by this author is in relation to students who transfer into the school. If the record of these students are not included the percentages obtained of those who fail would be less than is actually true. Such would also be the case with the percentages of those students who have skipped one or more grades.

2. Limitations of the Sample

The sample selected for study while avoiding some of the limitations mentioned by Stroud, is still subject to certain weaknesses. These operate to produce a picture of acceleration and retardation which is not complete.

This sample, while including all of those students who dropped out of school during this and the previous two years, does not include those students who left school before that time after having attained the age at which they may legally do so. However, since they cannot drop out before fifteen years of age, there will be few pupils omitted for this cause.

A further weakness of this selection was the incompleteness of some of the pupils' records. The previous school records of those students who had transferred into the city were not available. Also, in the case where a student had transferred out of the city and later transferred back, no record was available of progress while away. The inclusion of these students necessitated an assumption as to progress, while out of the city and before entry, which is subject to the limitations mentioned previously.(4) The study is further limited by the fact that a record of grade nine failures for the present year are not included.

An analysis of this sample, while subject to these limitations, will give a reasonably complete picture of acceleration and retardation up to but not including the end of grade nine.

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CHAPTER IV

EXPERIMENTAL DESIGN

1. Source of Data

The data used in this study were obtained from the school records of those students who attended grade nine in the King Edward and McCauley Intermediate Schools during the school year 1949-50. Also scrutinized were the records of those students who had dropped out of school during this and the previous two years. These students, had they remained in school would, assuming normal progress, now be in grade nine.

On the basis of a pilot study of one grade nine class in King Edward School, a decision was made as to the data requiring tabulation. It was decided also to ascertain, by means of a questionnaire, what, in the opinion of the teachers concerned, were the important causes of retardation, what percentage of failures might be anticipated at any point, and what percentage of acceleration they thought justifiable.(1)

2. Method

As the study necessitated the recording of considerable data resort was had to an index card system.

The following items of information were entered for each student:

1. Grades repeated (R) or skipped (S).
2. Transfers occurring.
3. Intelligence quotient as measured by the Laycock Intelligence Test.
4. Yearly attendance.
5. Grade level of spelling and reading ability as shown by the test indicated on the data card.
6. Father's occupation.
7. Date of leaving school, if applicable.

A typical data card follows:

Name - John Smith Date of Entry: Sept.3/41. Birth: May 15/35

Grade: 1 2 3 4 5 6 7 8 9
R

Trans: Within City | Out of City | Rural to City | City to City
Grade: 3 | 5 | 7

Intelligence: -74 | 75-84 | 85-94 | 95-104 ✓ | 105-114 | 115-124 | 125-134 | 135-

Attend.: -114 | 115-124 | 125-134 | 135-144 | 145-154 | 155-164 | 165-174 | 175-184 | 185-194 | 195
1 3 5 4 6 2 7 8

Accel. - Retard.: -4 | -3 | -2 | -1 ✓ | - | 1 | 2 | 3 | 4

E.P.S. Spelling Ability
Grade VII - 7.6
Grade VIII - 8.9

Father's Occupation: Mechanic

E.P.S. Word Meaning
Grade VIII - 9.3

Date of Leaving School: Dec.'50

Thorndike-McCall
Grade VIII - 10.2

Grade 9

The next step was the determination of the age of entry of those students who had transferred into city schools. From this were calculated their ages as at the end of June during year of entry to city schools. Then, assuming one year of progress for each year of advance in chronological age, their ages as at the end of June in grade one was determined. It was assumed, in all cases, that school had been started within six months of the school starting age of six years. On this assumption grade one would have been completed between the ages of six years three months and seven years three months. Any discrepancy between this and their age as determined at the end of grade one was recorded on the data card as number of years accelerated or retarded.

The next stage was the determination of acceleration and retardation in the case of those who left the city schools but later transferred back. Whether these students had made other than normal school progress while away was determined on the assumption of one year of school progress for each year out of city schools. Any discrepancy between number of years away and the number of grades completed was recorded as either acceleration or retardation.

From the data assembled, it was now possible to determine the proportion of students who had made other than normal progress, and the grades which had proven to be the greatest obstacles to normal progress.

In addition, the extent of acceleration and retardation before entry into city schools was determined. It was then shown to what extent this had influenced the total picture.

The next stage of the study was the determination of the causal relationship between acceleration and retardation and certain known items of information. Unfortunately test results of reading and spelling ability were not available for a sufficient number of the sample to make a study of this point worth while. In addition, it was discovered that the information as to father's occupation recorded on the data card was not accurate enough to be of any value.

Pearson's Coefficient of Linear Correlation was computed for each of the following combinations:

1. Acceleration and Retardation vs Intelligence test scores.
2. Acceleration and Retardation vs Total Number of Transfers.
3. Acceleration and retardation vs Average number of days attendance per year.

In each case correlation coefficients were calculated both separately and together for boys and girls.

The product moment method of computing Pearson's r was considered sufficiently accurate considering the

number of computational checks. The illustrative scatter-diagram and the computation of r is almost self explanatory.(2) The formula for r is

$$r = \frac{p\, u_1 u_2}{\sigma_1 \sigma_2}$$

Where U_1 is the computational variable for the various factors and U_2 is the computational variable for the degree of acceleration and retardation.

$$p\, u_1 u_2 = \overline{U_1 U_2} - \overline{U}_1 \overline{U}_2$$

$$\sigma_1 = \sqrt{\overline{U_1}^2 - \overline{U}_1^2}$$

$$\sigma_2 = \sqrt{\overline{U_2}^2 - \overline{U}_2^2}$$

The standard error of r was computed from the formula

$$\sigma_r = \frac{1 - r^2}{\sqrt{N - 1}}$$

The next stage of the study was the application of the test of significance to the r's obtained.

Finally a tabulation was made from the questionnaire of teacher opinion about the causes of retardation, expected incidence of failure, and desirable amounts of acceleration.

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1. Appendix A.
2. Appendix B.

CHAPTER V

ANALYSIS OF THE DATA RELATING TO SCHOOL PROGRESS

1. School Progress

The number of students and the proportions thereof, who have made other than normal progress through the city schools will be found classified in the following tables. These tables indicate the school progress of all students except those who had been accelerated and later retarded. Of these there were only two: one, a boy, who skipped grade two and later was retarded in grade nine; the other, a girl, skipped grade five and repeated grade six. These two comprise 0.5 per cent of the sample.

Table II indicates the number of students in the sample who had been retarded, accelerated and normally promoted. Of a total of three hundred and seventy children one hundred and forty-eight had made other than normal progress through the city schools.

An examination of Table II reveals that, of those retarded, eighty-four are boys and fifty-six are girls; of those accelerated, five are boys and three are girls. The most noticeable feature of Table II is the difference in the numbers accelerated and retarded. Of the one hundred and forty-eight who had made other than normal progress one hundred and forty had been retarded while only

TABLE II

SCHOOL PROGRESS IN GROSS NUMBERS

	Number of Years Retarded					Normal Progress	Number of Years Accelerated			
	4	3	2	1	Total	0	1	2	3	4
Boys	1	4	23	56	84	104	5			
Girls		2	15	39	56	118	3			
Both	1	6	38	95	140	222	8			

eight had been accelerated.

Since the boys in the sample slightly outnumbered the girls (52.2 per cent to 47.8 per cent), Table II may be misleading. Table III is therefore presented. It is a replica of Table II but all figures are expressed as percentages. From this table it is seen that a much larger percentage of boys than girls have been retarded, that a much larger percentage of girls than boys have made normal progress, and that approximately the same proportion of both have been accelerated. It is also evident that a large proportion of the sample has been retarded while only a very small percentage has been accelerated. The cumulative effect of promotion practices has resulted in 37.8 per cent of the sample being retarded while only 2.2 per cent have been accelerated.

TABLE III

PERCENTAGE OF CHILDREN RETARDED, ACCELERATED AND NORMALLY PROMOTED

	Boys	Girls	Both
Retarded	43.5	31.6	37.8
Normal Progress	53.9	66.9	60.
Accelerated	2.6	1.7	2.2

From Table IV it is evident that, while retardation of one year had been most frequent, a considerable proportion had been retarded two or more years. Proportionately more girls than boys had been retarded one year and more boys than girls had been retarded two or more years.

TABLE IV

PERCENTAGE OF RETARDED STUDENTS

Number of Years Retarded	One	Two	Three	Four
Boys	66.7	27.4	4.8	1.2
Girls	69.7	26.8	3.6	0
Both	67.9	27.1	4.3	0.7

Table II has shown that only eight pupils had been accelerated. Of these 62.5 per cent were boys and 37.5 per cent were girls. Of the sample this was only 2.2 per cent. This indicates that acceleration of superior students as a means of adjusting them to the school curriculum is used very sparingly. In all cases of acceleration only one grade had been skipped.

2. Acceleration and Retardation by Grades

The foregoing compilation has revealed that the practice of retardation has affected a large proportion of the pupils. However, it does not indicate which grades proved to be the greatest obstacles to normal progress. This was determined on the basis of grades producing the largest percentage of retardation.

From Table II it is noted that eight-four boys and fifty-six girls had repeated one grade or more. Of these twenty-one boys and nine girls had been retarded before entry to city schools and had not repeated any further grades in the city. Therefore sixty-three boys and forty-seven girls had repeated grades in the city schools. Table V indicates the number of grades these students had repeated. From this it is seen that a total of one hundred and forty-five grades had been repeated, eighty-three by boys and sixty-two by girls. In all cases more boys than girls had repeated grades.

TABLE V

NUMBER OF GRADES REPEATED

Number of Grades Repeated	One	Two	Three
Boys	46	14	3
Girls	33	13	1
Both	79	27	4

The grades which these students had repeated are shown in Table VI. From this and the following table, which indicates the percentage of retarded children who had repeated each grade, it is evident that when grades one to nine are arranged in order of grade producing the

TABLE VI

NUMBER OF RETARDED PUPILS FAILING EACH GRADE

Grade	1	2	3	4	5	6	7	8	9
Boys	19	13	7	6	6	3	12	10	7
Girls	11	9	3	6	5	3	8	7	10
Both	30	22	10	12	11	6	20	17	17

largest amount of failure they assume the following order: 1, 2, 7, (8, 9), 4, 5, 3, 6.

From these tables it is clearly evident that those grades which students found most difficult, as indicated by the percentage of failure, were grades one, two, seven, eight and nine. From Table VII it is noted that these grades accounted for 73.1 per cent of all failure. In all of these, except grade nine, a larger percentage of boys had failed than girls.

TABLE VII

PERCENTAGE OF RETARDED PUPILS FAILING EACH GRADE

Grade	1	2	3	4	5	6	7	8	9
Boys	22.9	15.7	8.4	7.2	7.2	3.6	14.5	12.	8.4
Girls	17.7	14.5	4.9	9.7	8.1	4.9	12.9	11.3	16.1
Both	20.7	15.2	6.9	8.3	7.6	4.1	13.8	11.7	11.7

An average picture of a study, conducted by members of the Edmonton Public School staff, over a four year period indicates that when grades are arranged in order of grade producing the largest percentage of failure they assume the following order: 7, 8, 1, 2, 3, 4, 5, 6, 9.(1) The most serious discrepancy between this picture and that found in this study is in the order of occurrence of grade

nine. However this discrepancy can be accounted for by the fact that the Edmonton study shows the percentage of students failing grade nine over a four year period while the present study deals only with those students who had failed grade nine and were repeating the grade this year.

It was previously noted that of the total population only eight had been accelerated. Of these, four, two boys and two girls, had been accelerated prior to entering the city schools. The others had skipped grade seven. Of the sample 1.5 per cent of the boys and 0.6 per cent of the girls had been accelerated in city schools. Together these comprise 1.1 per cent of the sample. The extent of acceleration has not been sufficient to determine any trends other than that very few superior students have been accelerated.

3. Effect of Transfers into the City

The proportions of the sample who had been accelerated and retarded was shown in Table III. In calculating these tables there were included all students who had transferred into city schools. Of these thirty-six had been retarded before entry, twenty-six boys and ten girls. Thus of the total sample 13.5 per cent of the boys and 5.7 per cent of the girls had been retarded one year or more before entry to city schools. These together comprised 9.7 per cent of the sample.

An examination of the records of these students revealed that of the thirty-six students retarded before entry five boys and one girl were retarded a further year after entering city schools. Therefore of the total number retarded twenty-five per cent of the boys and 16.1 per cent of the girls had been retarded before entry and had experienced no further retardation.

From Table III it is noted that 37.8 per cent of the sample had been retarded. If those students who had been further retarded after entry are excluded only 8.1 per cent of the sample were retarded before entry. Thus of the total percentage retarded 29.7 per cent had been retarded one year or more in city schools. Or, in other words, it can be stated that of the total number retarded 78,6 per cent had experienced failure in city schools.

Students retarded on entry to city schools had repeated a total of forty-eight grades as indicated by the degree of retardation. This indicated that of the total number of grades repeated 24.9 per cent had been repeated before entry while 75.1 per cent had been repeated in city schools. These tables show clearly that by far the larger amount of retardation occurred in the city.

TABLE VIII

PERCENTAGE OF RETARDATION BEFORE ENTRANCE TO CITY SCHOOLS

Number of Years Retarded	1	2	3	4
Boys	22.6	7.1	0	1.2
Girls	14.3	1.8	1.8	
Both	19.3	5	.7	.7

TABLE IX

PERCENTAGE OF RETARDATION IN CITY SCHOOLS

Number of Years Retarded	1	2	3	4
Boys	44	20.2	4.8	
Girls	55.4	25	1.8	
Both	48.6	22.1	3.6	

4. Summary

Acceleration and retardation of students has resulted in a considerable proportion of the sample making other than normal progress. It was first noted that 0.5 per cent of the sample had been accelerated and

later retarded. Excluding these students it was then shown that 37.8 per cent had been retarded while only 2.2 per cent had been accelerated. In addition, it was noted that a much larger proportion of boys than girls had been retarded, viz., 43.5 per cent as against 31.6 per cent. Also noted was that the number of accelerated students was very small and that approximately the same proportion of boys and girls had been affected.

The grades which produced the largest percentage of failure were in order: 1, 2, 7, 8, and 9. These grades together accounted for 73.1 per cent of all grade failure. Grade nine failure is indicated only for those students who had failed and were repeating the grade. Of the students who had been accelerated four had made more than normal progress in city schools. All of these students had skipped grade seven.

Of the sample 37.8 per cent had been retarded. Excluding those students who were further retarded after entry to city schools only 8.1 per cent had been retarded before entry. Thus 29.7 per cent of the sample had been retarded in city schools.

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CHAPTER VI

ANALYSIS OF THE RELATIONSHIP BETWEEN ACCELERATION AND RETARDATION AND OTHER FACTORS

1. Relation of Retardation to School Leaving

First dealt with are those students who had dropped out of school during this and the previous two years to the number of thirty-six. Table X indicates the number leaving school during each year.

TABLE X

NUMBER OF PUPILS LEAVING SCHOOL

Year of Leaving School	1947-48 Grade VII	1948-49 Grade VIII	1949-50 Grade IX
Boys	4	13	12
Girls	1	5	1
Both	5	18	13

It is clearly evident from the table that a much larger number of boys than girls dropped out of school. Of the sample 9.7 per cent had dropped out of school before the end of grade nine, 80.6 per cent being boys and 19.4 per cent girls.

Of the children who had dropped out of school none had made normal progress. All had been retarded one year or more. Table XI indicates the extent of retardation and the year in which these students left school.

TABLE XI

SCHOOL PROGRESS OF DROP-OUTS

Year of Leaving School	1947-48		1948-49		1949-50	
Number of Years Retarded	Boys	Girls	Boys	Girls	Boys	Girls
1	1		7	1	8	
2	2	1	4	2	4	1
3	1		1	2		
4			1			

In the first two years the majority of the drop-outs had been retarded two or more years. These students had repeated an average of 1.9 grades while those who had dropped out in grade nine had repeated an average of 1.4 grades. This would seem to indicate that those who are retarded the greater number of years drop out early.

Of the boys who dropped out of school twenty had failed one grade or more in city schools, nine had been retarded before entry. Of the girls six had repeated

one or more grades in the city schools while one had been retarded on entrance. The boys had repeated an average of 1.2 grades, the girls an average of 2.1 grades.

In addition it was discovered that twelve of the boys and three of the girls dropped out of school on reaching school leaving age.

2. Study of the Relationship Between Acceleration and Retardation and Other Known Factors

The scatter-diagrams used in the computation of the correlation coefficients are to be found in Appendix C and for purposes of illustration one correlation chart complete with the computation of r is included in Appendix B.

For the test of significance of r's Table 29 in Garrett(1) was used. The null hypothesis in determining the significance of a computed r asserts that any computed r of a randomly-drawn sample from a parent population deviates from zero due only to sampling fluctuations. At the .01 level of confidence we may reject the null hypothesis and state with the risk of being wrong 1 in 100 times that the computed value of an r is not due to accidents of sampling.

From this table it is seen that the relationship as indicated by the respective r's, is significant at the .01 level of confidence in the following cases:

TABLE XII

SUMMARY OF r's DENOTING THE RELATIONSHIP BETWEEN ACCELERATION AND RETARDATION AND OTHER FACTORS

Factors	N	r	σ_r	Significance
Intelligence:				
Boys	188	.65	.04	Highly Significant
Girls	171	.54	.05	Highly significant
Both	359	.60	.03	Highly significant
Total Number of Transfers:				
Boys	193	-.09	.07	Not significant
Girls	177	-.04	.08	Not significant
Both	370	-.07	.05	Not significant
Average Number of Days Attendance per Year:				
Boys	185	.07	.07	Not significant
Girls	166	.21	.08	Highly significant
Both	351	.12	.05	Significant

1. Acceleration and Retardation vs Intelligence Test Scores.
2. Acceleration and Retardation vs Average Number of Days Attendance per Year, in the case of girls.

It is also noted that the relationship is significant

at the .05 level of confidence in the case of Acceleration and Retardation vs Average Number of Days Attendance per year, when boys and girls are taken together. This means that the null hypothesis must be rejected in these instances.

From Table XII it is also seen that the relationship, as indicated by the respective r's, is not significant in the following cases:

1. Acceleration and Retardation vs Total Number of Transfers, in all cases.
2. Acceleration and Retardation vs Average Number of Days Attendance per Year, in the case of boys.

Therefore in these cases the null hypothesis must be accepted.

As a further indication of the relation of intelligence to acceleration and retardation the grouped frequency distribution of each of the following categories of students can be seen in Table XIII: drop-outs, retarded, normal progress, accelerated and the total of all categories. In each case the arithmetic mean, standard deviation and the standard error of the mean are indicated.

The increase in average intelligence from one category to the next indicates that, of the many factors which have a relationship to school progress, intelligence is one of the important ones.

TABLE XIII

INTELLIGENCE TEST SCORES FOR VARIOUS CATEGORIES OF STUDENTS

CLASS INTERVAL	Drop-outs	Retarded	Normal Progress	Accelerated	Total
-74	4	2			6
75-84	7	20	3		30
85-94	12	43	23	1	79
95-104	7	27	69		103
105-114	2	11	72	3	88
115-124		1	43	1	45
125-134			4	2	6
135-			1	1	2
Total	32	104	215	8	359
	$\bar{X}$ = 88.8	$\bar{X}$ = 92.7	$\bar{X}$ = 106.7	$\bar{X}$ = 117.5	$\bar{X}$ = 101.3
	σ = 10.8	σ = 9.8	σ = 10.4	σ = 14.8	σ = 12.9
	$\sigma_{\bar{x}}$ = 1.9	$\sigma_{\bar{x}}$ = 1.	$\sigma_{\bar{x}}$ = .7	$\sigma_{\bar{x}}$ = .5	$\sigma_{\bar{x}}$ = .7

3. Teacher Opinion

Teachers in answering the questionnaire indicated that they considered the most important causes of retardation to be:

1. Poor work and study habits.
2. Low level of intelligence.
3. Difficulty in reading.
4. Poor home conditions.

5. Poor school attendance.

6. Insufficient mastery of previous material.

These are listed in the order of importance as indicated by the number of teachers who considered them as important causes of retardation.

Thirty-one teachers, seven for Division I, six for Division II, and eighteen for Division III, answered the questionnaire. Table XIV indicates the number of teachers in each division and the total who considered each of the causes to be important. This table seems to indicate that the effect of poor work and study habits is cumulative and increases in importance as a cause of retardation in the higher grades. Other factors such as home conditions, intelligence, school attendance, and reading ability are indicated as being just as important causes of retardation in the lower as in the higher grades.

This questionnaire also revealed that all of the teachers anticipate a certain percentage of failure while only one-third of them consider any acceleration as desirable. The anticipated percentage of failure ranged from one to twenty per cent with an approximate average of seven per cent. What teachers considered to be the desirable percentage of acceleration ranged from zero to ten per cent with an approximate average

TABLE XIV

TEACHER OPINION OF CAUSES OF RETARDATION

Causes of Retardation	Grades 1-3	Grades 4-6	Grades 7-9	Grades 1-9
a. Poor home conditions	5	4	12	21
b. Low level of intelligence	6	6	12	24
c. Defective physical condition:				
Health	1	1		2
Vision		1		1
Hearing		1		1
d. Poor school attendance	2	4	7	13
e. Poor social and emotional adjustment	2	2	5	9
f. Frequent change of school		3	1	4
g. Difficulty in: Reading	4	5	13	22
Spelling	1	1	2	4
Arithmetic		6	1	7
h. Insufficient mastery of previous material	3	2	8	13
i. Poor work and study habits	2	5	18	25

of less than one per cent. Table XV shows the number of teachers who indicated varying percentages of acceleration and retardation as desirable or anticipated.

TABLE XV

ANTICIPATED PERCENTAGE OF FAILURE AND DESIRABLE PERCENTAGE OF ACCELERATION

	Grades 1-3		Grades 4-6		Grades 7-9		Grades 1-9	
Percentage	Acc.	Ret.	Acc.	Ret.	Acc.	Ret.	Acc.	Ret.
0	6		3		11		20	
1		1	1	1			1	2
2	1		2	1	2	2	5	3
3		2			3		3	2
4				1		1		2
5		2		2	1	7	1	11
10		2		1		5		8
15								
20						2		2

4. Summary

Students who dropped out of school during this and the previous two years comprised 9.7 per cent of the sample, 80.6 per cent boys and 19.4 per cent girls. None of these students had made normal progress. The boys had repeated an average of 1.2 grades while the girls had repeated an average of 2.1 grades. The majority of students who had dropped out of school before reaching grade nine

had been retarded two or more years. In addition it was shown that many of the retarded students had left school as soon as it was legally possible for them to do so.

Advancement through the grades appears to be affected by both intelligence and school attendance. The computed value of r and the increase in average intelligence from one category of students to the next, as shown in Table XII, indicates the close relationship between intelligence and normal school progress. The relationship between school attendance and school progress, as indicated by the computed value of r, while not very high does appear to be of some importance.

Teachers indicated that, in their opinion, the most important causes of retardation were:

1. Poor work and study habits.
2. Low level of intelligence.
3. Difficulty in reading.
4. Poor home conditions.
5. Poor school attendance.
6. Insufficient mastery of previous material.

The effect of poor work and study habits as a cause of retardation appeared to be cumulative and increased in importance through the grades. Other factors indicated as important causes of retardation seemed to be just as important in the lower as in the upper grades.

All of the teachers anticipated a certain percentage of failure. The percentage anticipated ranged from one to twenty per cent with an approximate average of seven per cent. Only one-third of the teachers considered any acceleration to be desirable. In their opinion the desirable percentage ranged from zero to ten per cent with an approximate average of less than one per cent.

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CHAPTER VII

CONCLUSIONS AND IMPLICATIONS

1. Conclusions

1. The practice of acceleration has resulted in 2.2 per cent of the sample being accelerated. Of the boys 2.6 per cent had been accelerated, while of the girls 1.7 per cent had been accelerated. Only 1.1 per cent of the sample had been accelerated in city schools, the remainder had been accelerated before transferring into the city.

2. The practice of retardation has resulted in 37.8 per cent of the sample being retarded. Of the boys 43.5 per cent had been retarded, while of the girls 31.6 per cent had been retarded. Of the sample 29.7 per cent had experienced failure in city schools.

3. The grades which produced the largest percentage of failure are, in order of percentage: 1, 2, 7, 8 and 9. These grades accounted for 73.1 per cent of all grade failure.

4. The grade which was most often skipped was grade seven. This occurred only in the case of four students. The extent of acceleration was not suffcient to justify any conclusions other than that use of the practice is very limited.

5. The advancement of pupils through the grades appears to be affected by both intelligence and school attendance. The computed value of r and the increase in average intelligence from drop-outs to accelerated students indicates the close relationship between intelligence and normal school progress. The relationship between attendance and school progress, as indicated by the computed value of r, while not very high does appear to be of some importance.

6. The most important causes of retardation, in the opinion of teachers concerned, are in order of importance as indicated by the number of teachers considering it important:

a. Poor work and study habits.

b. Low level of intelligence.

c. Difficulty in reading.

d. Poor home conditions.

e. Poor school attendance.

f. Insufficient mastery of previous material.

7. The anticipated percentage of failure, in the opinion of teachers concerned, ranged from one to twenty per cent with an approximate average of seven per cent.

8. The desirable percentage of acceleration, in the opinion of teachers concerned, ranged from zero to

ten per cent with an approximate average of less than one per cent. Two thirds of the teachers considered no acceleration as desirable.

2. Suggestions for Further Study

The need for further research is indicated by the small number found to have made more than normal progress. An effort should be made to discover the reason for the obvious acceptance on the part of school people that acceleration of superior students is undesirable. Such a belief is exhibited in the small number of students found to have been accelerated. Teacher opinion puts the desirable percentage of acceleration at zero.

Whether the limited use of acceleration as a means of adjusting the superior student to the school curriculum is due to the administrative difficulties involved or whether it is a reflection of the philosophy of the school should be determined.

It should also be determined whether, as this study indicates, there is a particular grade level at which acceleration most frequently does occur. If this is so, then an effort should be made to determine the reasons for preference of a certain level to accelerated students.

The large proportion of students who have failed and the uneven incidence of grade failure also point to the need for further research. Reported studies suggest that the values to be derived from grade repetition are not sufficient to warrant so large a percentage of students being retarded. An attempt should be made to determine the reasons for the high percentage of failure in grades 1, 2, 7, 8 and 9 and the comparatively low percentage of failure in grades 3, 4, 5 and 6. Whether this is due to differences in grade load or to other factors should be determined. One factor which should be considered is the influence of a departmental examination on the increase in percentage of failure in grades seven and eight.

Such a study, if undertaken, should consider the differences found to exist between boys and girls. Reasons why more boys than girls are retarded, and why retardation is more indicative of early school leaving in the case of boys than girls should be determined.

3. Implications

Keeping in mind the evidence from reported studies it would seem that the number of students affected by these practices in Edmonton City Schools are: in the case of acceleration too few, and in the case of retardation too many.

Acceleration should occur when a child is socially and emotionally, as well as intellectually, qualified to enter a higher grade. It is probable that one of the reasons teachers do not favor rapid progress is that they seldom find children qualifying for acceleration due to mental maturity who meet the social, emotional, and physical requirements of the higher grade.

The findings of this study indicate that two of the possible causes of retardation in Edmonton city schools are low mental ability and irregular school attendance. Many of the causes listed in the chapter on 'related Reading' could also be operative in these schools. Other studies suggest that a child gains little or nothing by being forced to repeat a grade. Certainly teachers who have thirty to forty students have not the time to devote to the remedial instruction needed by the retarded pupils. The author feels that instead of retardation the child needs remedial instruction under a skilful remedial teacher. One of the possible reasons administrators have done little to alleviate the extent of retardation is the difficulty they experience in securing extra staff to carry out a remedial program. If such remedial instruction was available the child could be promoted and at the same time receive special instruction in the areas where he is scholastically weak.

APPENDIX A

Questionnaire -- Survey of Opinion on Pupil Progress

SURVEY OF OPINION ON PUPIL PROGRESS

This questionnaire is designed to obtain a cross-section of teacher opinion of the causes which lead to retardation of pupils in the school. Your co-operation is requested in completing this questionnaire.

1. What grade or grades are you teaching? _____

2. By means of a check mark (✓) indicate what, in your opinion, are the important causes of retardation in the grade or grades which you are teaching.

   a. Poor home conditions. _____
   b. Low level of intelligence. _____
   c. Defective physical condition:
      Health _____
      Vision _____
      Hearing _____
   d. Poor school attendance. _____
   e. Poor social and emotional adjustment. _____
   f. Frequent changes of schools. _____
   g. Difficulty in: Reading _____
      Spelling _____
      Arithmetic _____
   h. Insufficient mastery of previous material. _____
   i. Poor work and study habits. _____

   ADDITIONAL REASONS. If there are any reasons, other than those listed, which you consider important, list them in the space below:

   j.

3. What percentage of failure do you usually anticipate in the grade which you are teaching? Circle the most appropriate answer.

   0 1 2 3 4 5 10 15 20

4. What percentage of students would you usually consider it desirable to accelerate (by grade skipping or other means) in the grade which you are teaching? Circle the most appropriate answer.

   0 1 2 3 4 5 10 15 20

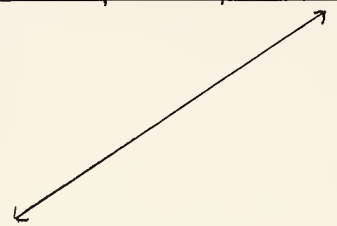
APPENDIX B

Illlustrative Correlation Chart and Computation of r.

Acceleration and Retardation - Number of Years

Intelligence Test Score. Midpoint of Class Interval

X_1 \ X_2		-4	-3	-2	-1	0	+1				
	U_1 \ U_2	-3	-2	-1	0	+1	+2	f_1	f_1U_1	$f_1U_1^2$	fU_1U_2
139.5	+3					1^{3}	1^{6}	2	6	18	9
129.5	+2					4^{2}	2^{4}	6	12	24	16
119.5	+1				1^{0}	43^{1}	1^{2}	45	45	45	45
109.5	0			4^{0}	9^{0}	72^{0}	3^{0}	88	0	0	0
99.5	-1			6^{1}	28^{0}	69^{-1}		103	-103	103	-63
89.5	-2		3^{4}	11^{2}	41^{0}	23^{-2}	1^{-4}	79	-158	316	-16
79.5	-3		2^{6}	13^{3}	12^{0}	3^{-3}		30	-90	270	42
69.5	-4	1^{12}	1^{8}	3^{4}	1^{0}			6	-24	96	32
	f_2	1	6	37	92	215	8	359	-312	872	65
	f_2U_2	-3	-12	-37	0	215	16	179			
	$f_2U_2^2$	9	24	37	0	215	32	317			
	fU_1U_2	12	32	79	0	-70	12	65			



1. $\overline{U_1U_2} = \frac{65}{359} = .1811$
2. $\bar{U}_1 = \frac{-312}{359} = -.8691$
3. $\bar{U}_1^2 = (-.8691)^2 = .7553$
4. $\bar{U}_2 = \frac{179}{359} = .4986$
5. $\bar{U}_2^2 = (.4986)^2 = .2486$
6. $\bar{U}_1^2 = \frac{872}{359} = 2.4290$
7. $\bar{U}_2^2 = \frac{317}{359} = .8830$
8. $pU_1U_2 = .1811-(-.8691)(.4986)$
   $= .6144$
9. $\sigma_1 = \sqrt{2.4290 - .7553} = 1.2937$
10. $\sigma_2 = \sqrt{.8830 - .2486} = .7965$
11. $r = \frac{.6144}{(1.2937)(.7965)} = .60$
12. $\sigma_r = \frac{.64}{18.92} = .034$

APPENDIX C

Scatter-diagrams used in the Computation of r's.

BOYS

Acceleration-Retardation - Number of Years.

Test Score
Intelligence-Midpoint of Class Interval

X_1 \ X_2	-4	-3	-2	-1	0	+1				
139.5						1				
129.5					2	1				
119.5					24	1				
109.5			1	6	34	1				
99.5			5	14	34					
89.5		3	7	27	7	1				
79.5		1	9	7						
69.5	1			1						

GIRLS

Acceleration-Retardation - Number of Years.

Test Score Intelligence-Midpoint of Class Interval

X_1 \ X_2	-4	-3	-2	-1	0	+1				
139.5					1					
129.5					2	1				
119.5				1	19					
109.5			3	3	38	2				
99.5			1	14	35					
89.5			4	14	16					
79.5		1	4	5	3					
69.5		1	3							

BOTH

Acceleration-Retardation - Number of Years.

Test Score
Intelligence-Midpoint of Class Interval

X_1 \ X_2	-4	-3	-2	-1	0	+1				
139.5					1	1				
129.5					4	2				
119.5				1	43	1				
109.5			4	9	72	3				
99.5			6	28	69					
89.5		3	11	41	23	1				
79.5		2	13	12	3					
69.5	1	1	3	1						

BOYS

Acceleration-Retardation. Number of Years

Total Number of Transfers During School Career

X_1 \ X_2	-4	-3	-2	-1	0	+1				
0				1	11					
1			4	26	46	1				
2	1	3	14	17	27	2				
3		1	3	5	13	1				
4			1	2	4	1				
5			1	1	2					
6					1					

GIRLS

Total Number of Transfers During School Career

Acceleration-Retardation. Number of Years

X_1 \ X_2	-4	-3	-2	-1	0	+1				
0			2	5	10					
1			4	15	4	1				
2			5	14	45					
3		2	3	3	15	2				
4					6					
5				1						
6			1	1	1					

Total Number of Transfers During School Career.

BOTH

Acceleration-Retardation. Number of Years

X_1 \ X_2	-4	-3	-2	-1	0	+1				
0			2	10	21					
1			8	41	87	2				
2	1	3	19	31	72	2				
3		3	6	8	28	3				
4			1	2	10	1				
5			1	2	2					
6			1	1	2					
7										

BOYS

Acceleration-Retardation. Number of Years

Average Number of Days Attendance per Year.

X_1 \ X_2	-4	-3	-2	-1	0	+1				
189.5		1	5	17	34	2				
179.5	1	3	11	24	49	3				
169.5			7	10	9					
159.5				2	2					
149.5				1	2					
139.5				1						
129.5										
119.5					1					

GIRLS

Acceleration-Retardation. Number of Years.

Average Number of Days Attendance per Year.

X_1 \ X_2	-4	-3	-2	-1	0	+1				
189.5			1	10	28	1				
179.5		1	7	19	53	2				
169.5		1	3	3	22					
159.5			2	2	4					
149.5				1	2					
139.5			2							
129.5										
119.5				2						

BOTH

Acceleration-Retardation. Number of Years.

Average Number of Days Attendance per year.

X_1 \ X_2	-4	-3	-2	-1	0	+1				
189.5		1	6	27	62	3				
179.5	1	4	18	43	102	5				
169.5		1	10	13	31					
159.5			2	4	6					
149.5				2	4					
139.5			2	1						
129.5										
119.5			2	1						

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